

**CACHE WITH SELECTIVE LEAST FREQUENTLY USED OR MOST  
FREQUENTLY USED CACHE LINE REPLACEMENT**

**Abstract of the Disclosure**

5                   Methods and apparatus allowing a choice of Least Frequently Used (LFU)  
or Most Frequently Used (MFU) cache line replacement are disclosed. The methods and  
apparatus determine new state information for at least two given cache lines of a number  
of cache lines in a cache, the new state information based at least in part on prior state  
information for the at least two given cache lines. Additionally, when an access miss  
10 occurs in one of the at least two given lines, the methods and apparatus (1) select either  
LFU or MFU replacement criteria, and (2) replace one of the at least two given cache  
lines based on the new state information and the selected replacement criteria.  
Additionally, a cache for replacing MFU cache lines is disclosed. The cache additionally  
comprises MFU circuitry (1) adapted to produce new state information for the at least two  
15 given cache lines in response to an access to one of the at least two given cache lines, and  
(2) when a cache miss occurs in one of the at least two given cache lines, adapted to  
determine, based on the new state information, which of the at least two given cache lines  
is the most frequently used cache line.